

REMARKS

Applicant wishes to thank the Examiner for the courtesy extended during the Interview held on January 29, 2008.

Status of the claims

The specification stands objected to for its introduction of allegedly new matter. Claim 21 stands rejected under 35 U.S.C. § 102(b)/103(a) as allegedly being anticipated by, or in the alternative as allegedly being obvious over Muellich (U.S. Patent No. 5,893,959). Claims 2-8, 10, 13-20, 26-27, 29, 62, and 68-74 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin (U.S. Patent No. 3,477,194) in view of Andrus et al. (U.S. Patent No. 5,093,147) (hereinafter “Andrus”). In addition, Claims 2-8, 10, 13-20, 27, 29, 62, and 67-74 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich in view of Andrus. Further, Claims 63-67 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Corrsin and Andrus, further in view of Osborne (U.S. Patent No. 4,069,080). Finally, Claims 26, 30, and 63-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Muellich and Andrus, further in view of Osborne.

Response to new matter objection

Applicant respectfully submits that the specification does not contain new matter and that the specification contains clear support for the term “dissolved.” In particular, quoting from the last paragraph of the specification: “In these cases the dye was *dissolved* in a suitable solvent and painted over the joint region with resultant deposition of dye both at the surface and infusion of the dye very slightly into the substrate.” The paragraph also notes that “[i]t should be noted that

while maximum dye utility is attained when the dye is truly *dissolved* in the substrate (film or bulk or other carrier) ...”

Accordingly, Applicant respectfully submits that the use of the term “dissolved” does not constitute new matter. Applicant respectfully requests the reconsideration and withdrawal of this objection.

Response to rejection of claims 2-8, 10, 13-20, 26-27, 29, 62 and 68-74 under 35 U.S.C. 103(a) based on Corrsin in view of Andrus

Independent Claim 10 recites a method of forming a weld between plastics workpieces over a joint region. The method comprises exposing the joint region to incident radiation having a wavelength outside the visible range so as to cause melting of the surface of one or both workpieces at the joint region, and allowing the melted material to cool thereby welding the workpieces together. The method further comprises providing a radiation absorbing dye in dissolved form at the joint region in one of the workpieces or between the workpieces which has an absorption band in the range 780 nm – 1500 nm matched to the wavelength of the incident radiation so as to absorb the incident radiation and generate heat for the melting process, wherein the radiation absorbing dye is visually transmissive after welding.

A problem in conventional laser welding processes of this type is that there are constraints on the appearance of the workpieces that can be welded. Thus, either one uses the approach described in Muellich, in which the color and opaqueness of the workpieces match absorbing material after welding, or a visually unappealing weld results.

The present invention as defined in Independent Claim 10 is a solution to the above problem comprising the use of a radiation absorbing material having three key features, namely:

- (i) has an absorption band in the range of 780 nm – 1500 nm matched to the wavelength of the incident radiation (hereafter Feature 1);
- (ii) is visually transmissive after welding (hereafter Feature 2); and
- (iii) is provided in the form of a dissolved dye (hereafter Feature 3).

Similar to the present invention, Corrsin also generally relates to the laser welding process.

Furthermore, Applicant acknowledges that Corrsin's passage in lines 16-22 of column 4 teaches an absorber having an absorption band range of 1 to 3 microns (i.e. 1000 to 3000 nm) that overlaps with Feature 1.

However, Corrsin fails to teach both Features 2 and 3 of the present invention.

With respect to Feature 2, Applicant acknowledges that lines 65-70 in column 3 of Corrsin teaches using a "substantially visually transparent" absorber in the context of joining "two transparent films, or substantially transparent films". However, there is no explicit teaching in Corrsin as to whether "substantially visually transparent" is referring to the pre-welding condition of the absorber or the condition of the absorber after welding and Applicant respectfully submits that in the absence of a clear basis in Corrsin (or some other reference) that "visually transmissive" is referring to the condition of the absorber after welding, such an interpretation suggests the teaching of the invention is being used to improperly interpret the reference under MPEP 2142.

With respect to Feature 3, the Examiner acknowledges that Corrsin fails to teach this feature but argues that it would obvious to arrive at the present invention by combining Corrsin with Andrus which teaches the use of a dye in a process for providing intelligible markings on an article's surface that are invisible to the unaided eye.

Applicant respectfully disagrees. In particular, there is no suggestion in either reference that they be combined in the manner suggested by the Examiner. Absent such a suggestion, one skilled in the art looking for a solution to the problem of removing constraints on the appearance of the workpieces would hardly be disposed on any objective basis to consult a reference like Andrus. In particular, not only does Andrus show absolutely no recognition of this problem, Andrus is completely unconcerned with the laser welding of plastics at all. Applicant respectfully submits this qualifies Andrus as “non-analogous art” pursuant to *In re Wood and Eversole*, 2002 USPQ 171 (CCPA 1979).

Furthermore, even if Corrsin and Andrus were combined in the manner suggested by the Examiner, the combination does not include Feature 2 of the present invention.

Moreover, even if Corrsin and Andrus were combined in the manner suggested by the Examiner, and even if Corrsin’s “visually transparent” teaching could be interpreted as referring to the condition of the absorber after welding, this *still* does not meet the terms of Claim 10. In particular, whereas Claim 10 makes it clear that the functionality of the radiation absorbing dye is to “generate heat” for a melting process in response to the incident radiation, the functionality of the dye taught in Andrus (including in claim 1 thereof) is to fluoresce (i.e. generate light) in response to the incident radiation.

The rejection to the claims under this section other than claim 10 is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Accordingly, Applicant respectfully submits that the present claims are not rendered obvious by this combination of references, and respectfully requests the reconsideration and withdrawal of this § 103 rejection.

***Response to rejection of claims 2 -8, 10, 13-20, 27, 29, 62 and 67-75 under 35 U.S.C. 103(a)
based on Muellich in view of Andrus***

Similar to both the present invention as defined in Independent Claim 10 and Corrsin, Muellich also generally relates to the laser welding process as defined *supra*.

Furthermore, similar to Corrsin, Applicant acknowledges that Muellich teaches an absorber having an absorption band that overlaps with Feature 1.

However, also similar to Corrsin, Muellich fails to teach Features 2 and 3 of the present invention.

With respect to Feature 2, there is no absolutely no teaching in Muellich of an absorber that is visually transmissive, much less visually transmissive after welding. Responsive to the Muellich passage cited by the Examiner which states that that "After welding, the individual work pieces are no longer substantially visible to the human eye", this is clearly not the same as teaching the radiation absorbing material is no longer substantially visible to the human eye after welding. In particular, this teaching in Muellich is referring to the fact that the additives taught in Muellich are color pigments applied to the substrates in bulk and are intended to alter the color and opaqueness of the plastic substrates so that they match the color and opaqueness of the pigments themselves. In this fashion, the assembled plastic parts, although restricted to being opaque, are at least visually homogeneous such that "after welding, the individual work pieces are no longer substantially visible to the human eye".

With respect to Feature 3, the Examiner acknowledges that Muellich fails to teach this feature but argues that it would obvious to arrive at the present invention by combining Muellich with Andrus which, as noted *supra*, teaches the use of a dye in a process for providing intelligible markings on an article's surface that are invisible to the unaided eye.

Applicant respectfully disagrees. In particular, there is no suggestion in either reference that they be combined in the manner suggested by the Examiner. Absent such a suggestion, one skilled in the art looking for a solution to the problem of removing constraints on the appearance of the workpieces would hardly be disposed on any objective basis to consult a reference like Andrus. In particular, not only does Andrus show absolutely no recognition of this problem, Andrus is completely unconcerned with the laser welding of plastics at all. Applicant respectfully submits this qualifies Andrus as “non-analogous art” pursuant to *In re Wood and Eversole*, 2002 USPQ 171 (CCPA 1979).

Furthermore, even if Muellich and Andrus were combined in the manner suggested by the Examiner, the combination does not include Feature 2 of the present invention.

Moreover, even if Muellich and Andrus were combined in the manner suggested by the Examiner and the combination did teach Feature 2, this *still* does not meet the terms of Claim 10. In particular, whereas Claim 10 makes it clear that the functionality of the radiation absorbing dye is to “generate heat” for a melting process in response to the incident radiation, the functionality of the dye taught in Andrus (including in claim 1 thereof) is to fluoresce (i.e. generate light) in response to the incident radiation.

The rejection to the claims under this section other than claim 10 is considered moot to the extent these are dependent claims that are not being relied upon to establish patentability.

Accordingly, Applicant respectfully submits that these references do not render obvious the presently claimed invention, and respectfully request the reconsideration and withdrawal of this § 103 rejection.

Response to rejection of claims 63-67 under 35 U.S.C. 103(a) based on Corrsin and Andrus in view of Osborne

Applicant respectfully submits that Osborne does not remedy the deficiencies of Corrsin and Andrus set forth above. Accordingly, Applicant respectfully requests the reconsideration and withdrawal of this § 103 rejection.

Response to rejection of claims 26, 30, and 63-66 under 35 U.S.C. 103(a) based on Muellich and Andrus in view of Osborne

Applicant respectfully submits that Osborne does not remedy the deficiencies of Muellich and Andrus set forth above. Accordingly, Applicant respectfully requests the reconsideration and withdrawal of this § 103 rejection.

Response to rejection of product-by-process claim 21 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Muellich

Applicant submits that the presently claimed invention is novel in respect of Muellich, because Muellich does not disclose all the features of the presently claimed invention.

The present invention allows for welding to be performed without any need to alter the color of the parts, which stands in stark contrast to Muellich's use of visually opaque additives that render workpieces, and thus the welded component, visually opaque.

Accordingly, Applicant respectfully submits that Muellich is structurally distinct from the presently claimed invention, and Applicant therefore respectfully requests the reconsideration and withdrawal of this §§ 102/103 rejection.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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